

WHAT IS CLAIMED IS:

1. A diagnostic method for a fuel cell battery comprising a plurality of cells, comprising:
 - supplying an anode of the fuel cell battery with hydrogen or a hydrogen-containing gas;
 - supplying a cathode with an inert gas or vacuuming the cathode;
 - measuring a voltage of each cell under a condition in which the hydrogen or the hydrogen-containing gas is supplied to the anode of the fuel cell and the inert gas is supplied to the cathode or the cathode is vacuumed; and
 - determining an amount of cross-leak based on a measured voltage of each cell.
2. The diagnostic method according to claim 1, wherein in the determining step, an amount of hydrogen cross-leak of each cell is determined from the measured voltage of each cell generated based on a principle of a hydrogen concentration cell.
3. The diagnostic method according to claim 1, further comprising:
 - detecting a gas pressure at the anode;
 - calculating a pressure of the hydrogen-containing gas at the cathode based on the gas pressure at the anode and on the measured voltage of each cell;
 - detecting a total pressure of the inert gas supplied to the cathode;
 - detecting an amount of the inert gas supplied to the cathode; and
 - calculating an amount of cross-leak based on the pressure of the hydrogen-containing gas at the cathode, on the total pressure of the inert gas supplied to the cathode, and on the amount of the inert gas supplied to the cathode.
4. The diagnostic method according to claim 1, wherein the voltage of each cell is measured in a state where the plurality of cells are stacked.
5. The diagnostic method according to claim 1, further comprising changing at least one of the gas pressure at the anode and the gas pressure at the cathode when measuring the voltage of each cell.
6. The diagnostic method according to claim 1, further comprising:
 - introducing a cooling medium into a battery of the fuel cell; and
 - changing a temperature of the cooling medium when measuring the voltage of each cell.

7. The diagnostic method according to claim 1, wherein the inert gas supplied to the cathode is nitrogen.